

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-28 (withdrawn)

Claim 29 (currently amended): A method of detecting a target biopolymer contained in a sample, comprising the steps of:

(a) providing a substrate with a surface;

(b) modifying the surface of the substrate by introducing a functionality selected from a group consisting of amino group, carboxyl group, thiol group, and their derivatives on the surface providing to obtain a modified substrate surface;

(b)(c) providing a probe biopolymer that can form a complex with the target biopolymer;

(e) (d) contacting either the probe or target biopolymer with a the modified surface of the substrate and drying the substrate whereby either the probe or target biopolymer directly adsorbs and immobilizes on the substrate modified surface without additional fixing steps to form a probe assay article or a target assay article, respectively;

(d) (e) contacting the probe assay article with the target biopolymer, or contacting the target assay article with the probe biopolymer under a condition that allows the formation of a complex comprising the probe and the target biopolymers; and

(e) (f) detecting and determining the presence of the complex as a measurement for the presence or the amount of the target biopolymer contained in the sample.

Claim 30 (Currently amended): The method of claim 29, wherein the modified surface substrate is an amino-modified substrate surface.

Claim 31 (Currently amended): The method of claim 30, wherein the substrate with amino-modified substrate surface is amino polypropylene.

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Claim 32 (original): The method of claim 29, wherein each of the target and the probe biopolymers are selected from a group consisting of nucleic acids, polypeptides, proteins, and analogues thereof.

Claim 33 (previously amended): The method of claim 29, wherein the target biopolymer is a target polynucleotide, and the probe biopolymer is a polynucleotide that is complementary to the target polynucleotide.

Claim 34 (original): The method of claim 33, wherein the complex further comprises a reporter selected from the group consisting of dyes, chemiluminescent compounds, enzymes, fluorescent compounds, metal complexes, magnetic particles, biotin, haptens, radio frequency transmitters, and radioluminescent compounds.

Claim 35 (Currently amended): The method of claim 34, wherein the biopolymer is a polynucleotide, the reporter is biotin, and the method of claim 34 further comprises a step of incubating the complex adsorbed on the modified surface of the polypropylene substrate with streptavidin-alkaline phosphatase and an ELF reagent for developing a fluorescent signal prior to the detecting step.

Claim 36 (Currently amended): The method of claim 35, wherein the modified substrate surface is an amino-modified substrate surface.

Claim 37 (Currently amended): The method of claim 36, wherein the substrate with the amino-modified substrate surface is amino polypropylene.

Claim 38 (Currently amended): The method of claim 29, wherein the same or different probe or target biopolymers are adsorbed on discrete, isolated areas on the modified surface of the aminated polypropylene substrate to form an array.

Claim 39 (original): The method of claim 38, wherein the detecting step comprises recording the signal with a confocal array reader.

Claim 40 (original): The method of claim 39, wherein the signal is a fluorescence and the confocal array reader is a CCD camera.

Claim 41 (original): The method of claim 29, wherein the substrate is made of polypropylene or polyethylene.

Claim 42 (Currently amended): The method of claim 41, further comprising wherein the modifying step comprises a step of aminating the surface of the substrate prior to the step of contacting.

Claims 43-54 (withdrawn)

Claim 55 (previously added) The method of claim 29, wherein the probe biopolymer or the target biopolymer of step (c) is unmodified.

Claim 56 (previously added) The method of claim 29, wherein the probe biopolymer or the target biopolymer of step (c) is modified.

Claim 57 (previously added) The method of claim 29, wherein the amount of the probe biopolymer or the target biopolymer contacted with the substrate modified surface in step (c) ranges from about 10-20 to about 10-14 moles.

Claim 58 (previously added) The method of claim 57, wherein the probe biopolymer or the target biopolymer is a polynucleotide, and the amount of the polynucleotide is about 10-18 moles.

Claim 59 (previously added) The method of claim 57, wherein the contacting step (c) comprises placing an aliquot of the probe biopolymer or the target biopolymer solution on the modified substrate surface, wherein the aliquot is from about 0.1 nL to about 500 nL.

Claim 60 (previously added) The method of claim 59, wherein the probe biopolymer or the target biopolymer is a polynucleotide, and the aliquot is about 10 nl.

Claim 61 (previously added) The method of claim 29, wherein the drying is air-drying conducted for a period ranging from about 5 minutes to about 60 minutes.

Claim 62 (previously added) The method of claim 61, wherein the air-drying is conducted for a period of about 15 min.

Claim 63 (canceled)

Claim 64 (currently amended): A method of detecting a polypeptide contained in a sample, comprising the steps of:

(a) providing a substrate with a surface;

(b) modifying the surface of the substrate by introducing a functionality selected from a group consisting of amino group, carboxyl group, thiol group, and their derivatives on the surface providing to obtain a modified substrate surface;

(b)-(c) providing a probe polypeptide that can form a complex with the target polypeptide;

(e)-(d) contacting either the probe or target polypeptide with a the modified surface of the substrate and drying the substrate whereby either the probe or target polypeptide directly adsorbs and immobilizes on the substrate modified surface without additional fixing steps to form a probe assay article or a target assay article, respectively;

(d) (e) contacting the probe assay article with the target polypeptide, or contacting the target assay article with the probe polypeptide under a condition that allows the formation of a complex comprising the probe and the target polypeptides; and

(e) (f) detecting and determining the presence of the complex as a measurement for the presence or the amount of the target polypeptide contained in the sample.

Claim 65 (previously added) The method of claim 64, wherein the probe polypeptide is a protein.

Claim 66 (previously added) The method of claim 64, wherein the target polypeptide is a protein.

Claim 67 (cancelled)

Claim 68 (Currently amended): The method of claim 64, wherein the amount of the probe polypeptide or the target polypeptide contacted with the substrate modified surface in step (c) ranges from about 10-20 to about 10-14 moles.

Claim 69 (Previously amended): The method of claim 64, wherein the aliquot is from about 0.1 nL to about 500 nL.

Claim 70 (Previously amended): The method of claim 64, wherein the drying is air-drying conducted for a period ranging from about 5 minutes to about 60 minutes.